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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/656,808	09/07/2000	Iran R. McLean	60,426-047	1859

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EXAMINER
SAN MARTIN, EDGARDO

ART UNIT	PAPER NUMBER
2837	

DATE MAILED: 12/19/2001

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/656,808	MCLEAN, IAN R.	
	Examiner	Art Unit	
	Edgardo San Martin	2837	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 September 2000* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 September 2000* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Drawings

1. The drawings are objected to because:

   - In Figure 1, referral numbers "16" is used to indicated two different parts, a "throttle body" and "combustion chambers through runners";
   - In Figure 1, function boxes "58", "54" and "56" should be indicated with the function that they represent.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1 – 8, 13 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Geddes (US 5,229,556).

With respect to Claim 1, Geddes teaches a Helmholtz resonator (Fig.1, Item 58) comprising a chamber (Fig.1, Item 34) at least partially defining a cavity, a neck (Fig.1, Item 41) in the chamber and having a passage in fluid communication with the cavity, the chamber and neck producing a passive response to a sound wave, and an active resonator (Fig.1, Item 28) disposed within the chamber, the active resonator producing a forced response for supplementing the passive response (Col.2, Line 59 – Col.3, Line 8).

With respect to Claim 2, Geddes teaches wherein the neck (Fig.1, Item 41) is a tubular structure extending from the chamber (Col.4, Lines 50+).

With respect to Claims 3, 4 and 14, Geddes teaches wherein the active resonator is a loudspeaker (Fig.1, Item 20), and wherein the loudspeaker is a woofer (Col.2, Lines 1 – 14).

With respect to Claim 5, Geddes teaches wherein the chamber (Fig.1, Item 34) includes a flange (Fig.1, Item 32) with the loudspeaker (Fig.1, Item 28) supported thereon, and the loudspeaker having a diaphragm (Fig.1, Item 37) disposed within an opening in the flange for producing the forced response.

With respect to Claim 6, Geddes teaches wherein the flange (Fig.1, Item 32) includes at least one pressure equalization port (Fig.1, Item 39) there through in fluid communication with the cavity (Fig.1, Item 34).

With respect to Claim 7, Geddes teaches wherein the flange (Fig.1,Item 32) is arranged opposite the neck (Fig.1,Item 41).

With respect to Claim 8, Geddes teaches an induction noise attenuation system for a combustion engine (Col.3, Lines 53 – 66) comprising a portion of an air induction system defining a passageway (Fig.1, Item 14) carrying a sound wave, a Helmholtz resonator (Fig.1, Item 58) having a chamber (Fig.1, Item 34) at least partially defining a cavity and a neck (Fig.1, Item 41) in the chamber fluidly connecting the portion of the air induction system and the cavity, the chamber and the neck producing a passive response to the sound wave, an active resonator (Fig.1,Item 28) disposed within the chamber; and a driver (Fig.1, Item 60) connected to the active resonator producing a signal for driving the active resonator and producing a forced response for supplementing the passive response (Col.4, Lines 25 – 39).

With respect to Claim 13, Geddes teaches wherein the passageway is arranged between an intake manifold and a throttle body (Col.3, Lines 53 – 66).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 9 – 12 and 15 – 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Geddes (US 5,229,556) in view of Fukami et al. (US 4,546,733).

With respect to Claim 9, Geddes teaches the limitations discussed in the previous rejection, but fails to disclose wherein the driver includes a signal source that detects a speed of the combustion engine for synchronizing the forced response relative to the speed.

On the other hand, Fukami et al. teach a control system operation for an internal combustion engine resonator in which the speed of the engine is determined and a signal is produced in order to control an actuator that tunes the resonator to attenuate the noise made by the engine (Fig.6; Col.3, Line 66 – Col.4, Line 9).

It would have been obvious to a person with ordinary skill on the art to provide the Geddes control system with the Fukami et al. control system operations because the speed of the engine is directly proportional to the noise produced by the engine, if the speed of the engine is determined the magnitude of the noise can be determined and a control signal can be produce to tune the resonator in order to attenuate the noise.

With respect to Claim 10, Fukami et al. teach wherein the signal source is engine RPM (Col.4, Line 59 – Col.5, Line 6).

With respect to Claim 11, Geddes teaches wherein the driver includes a phase compensator for synchronizing the forced response approximately 180° out of phase with the sound wave (Col.1, Lines 44 – 55).

With respect to Claim 12, Geddes teaches wherein the driver (Fig.1, Item 60) includes an amplifier (Fig.1, Item 72) for amplifying a signal from the signal source (Fig.1, Item 12) (Col.4, Lines 25 – 39).

With respect to Claim 15, Geddes teaches a method of attenuating noise in an induction system comprising,

a) sensing an engine noise signal;

b) producing a phase compensated engine noise signal;

c) driving a loudspeaker with the phase compensated engine noise signal; and

d) propagating a sound wave with the loudspeaker to attenuate the noise in the induction system. (Col.3, Line 67 – Col.5, Line 64)

However, Geddes fails to disclose the engine signal to be an engine speed signal.

Nevertheless, Fukami et al. teach a control system method for an internal combustion engine resonator in which the speed of the engine is determined and a signal is produced in order to control an actuator that tunes the resonator to attenuate the noise made by the engine (Fig.6; Col.3, Line 66 – Col.4, Line 9).

It would have been obvious to a person with ordinary skill on the art to provide the Geddes control system method with the Fukami et al. control system operations because the speed of the engine is directly proportional to the noise produced by the engine, if the speed of the engine is determined the magnitude of the noise can be

determined and a control signal can be produce to tune the resonator in order to attenuate the noise.

With respect to Claim 16, Geddes teaches further including the step of e) amplifying the engine noise signal (Fig.1, Item 12) (Col.4, Lines 25 – 39).

With respect to Claim 17, Geddes teaches further including the step of f) propagating a passive sound wave with a Helmholtz resonator, wherein step d) supplements the passive sound wave (Fig.1, Item 20; Col.4, Lines 18 – 39).

With respect to Claims 18 – 20, Geddes teaches wherein step b) includes determining a loudspeaker response, wherein step b) includes determining a Helmholtz resonator cavity response, and wherein step b) includes determining a Helmholtz resonator neck response (Fig.1, Item 24; Col.4, Lines 25 – 39).

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. McLean (US 5,771,851) teaches a variably tuned helmholtz resonator with linear response controller, Miller et al. (US 5,748,749) teache an active noise canceling muffler, Tanaka et al. (US 5,446,790) teache an intake sound control apparatus, Goodman et al. (US 5,446,249) teach a dry acoustic system preventing condensation, Brackett et al. (US 5,377,629) teach an adaptive manifold tuning,

Hase (JP 05098927) teaches an active cancel muffler, and Langley (WO 93/09334) teaches an actively sound reduced muffler having a venturi effect configuration.

Contact Information

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edgardo San Martin whose telephone number is (703)308-1050. The examiner can normally be reached on 8:00AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Nappi can be reached on (703)308-3370. The fax phone numbers for the organization where this application or proceeding is assigned are (703)305-3431 for regular communications and (703)305-3431 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

Edgardo San Martin
Patent Examiner
Art Unit 2837
Class 181
December 16, 2001

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PRIMARY EXAMINER